

**SUBSTITUTE SPECIFICATION**

**SCRAPER BLADE**

**CROSS REFERENCE TO RELATED APPLICATIONS**

This application is based on PCT/FR 2004/000253 filed March 24, 2004, claiming priority from French application Serial No. FR 03/04916, filed in France on April 22, 2003. The subject matter of said applications are hereby incorporated by reference in their entirety, and a claim of priority is made under 35 USC 119.

**BACKGROUND OF INVENTION**

1. Field of the Invention

The invention concerns a scraper blade.

2. Description of Related Art

When heavy materials are conveyed on endless conveyor belts, the heavy material sometimes has a tendency to stick to the conveyor belt.

To eliminate such deposits of material, a scraper is used which, bearing on the face of the face of the conveyor belt, detaches the material.

These scrapers are mounted in particular at the conveyor belt return device just downstream of the area where the material leaves the conveyor belt.

These scrapers are then referred to as frontal scrapers.

Conventionally, a scraper comprises one or more scraper blades mounted on a common support, this common support comprising a tensioning means with a view to forcing the scraper blade in the direction of the conveyor belt.

The tensioning means makes it possible in particular to keep the blade in contact with the belt as the said blade wears.

These blades, in order to be exchangeable, have a fixing means on the support, this fixing means being more or less elaborate.

More and more often, blades are produced from synthetic material and in order to fix them to the support these blades are moulded onto a metal insert.

The insert is usually a straight metallic plate as shown in EP 893 376 or a sort of profiled section in an inverted U as shown in U.S. 5, 979,638.

Unfortunately problems of longevity are found, in particular relating to the forces which are transmitted in the blade, these forces being mainly directed in the direction of the height of the said blade.

The blade then has to dissipate all the forces and often connection faults occur between the insert and the part moulded on top.

### **SUMMARY OF THE INVENTION**

The invention sets out to afford a solution to the problems mentioned above.

To this end, the object of the invention is a scraper blade made from synthetic material moulded on an insert used for fixing it to a support. This scraper blade is characterised in that the insert is in the form of a metal plate comprising a first external part that extends the base of the scraper blade downwards and a second internal part inclined with respect to the aforementioned first part. This inclination is such that the forces exerted on the blade when the blade is applied to the conveyor are substantially perpendicular to this second part.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

The invention will be clearly understood by means of the description given below by way of non-limiting example with regard to the drawing which depicts schematically:

FIG. 1 is a perspective of a scraper shown mounted on its support

FIG. 2 is a profile view of the scraper shown in Fig. 1 shown in position with a conveyor belt.

### **DESCRIPTION OF PREFERRED EMBODIMENTS**

Referring to the drawing, a scraper blade 1 made from synthetic material is moulded on an insert 2 to provide a free end 1A adapted to serve as a scraper.

Insert 2 is in particular used for fixing the blade 1 to a support 3 acted on by a tension means T which serves to apply the free end 1A of the blade 1 against the carrying face 4 of a conveyor belt C which travels across drum D.

This blade 1 is of the type used for a so-called frontal mounting.

This blade 1 has its free end 1A presenting a leading edge E and possibly a substantially planar face 5 that is mounted so as to be substantially tangent to the point of application of the edge of the blade in contact with the conveyor belt drum or cylinders with which it is associated. A conveyor belt is shown in Fig. 2.

The blade 1 thickens from its top part towards the bottom T, part T being wider than part t.

Scraper blade 1 is slightly curved, the concavity being turned towards the conveyor when the blade is mounted on its support 3.

The profiles of the frontal and dorsal face are determined in particular so that the blade resists flexion.

The insert 2 makes it possible to fix the blade to a support 3 which, by an elastic or other means, such as spring T tends to apply and kills the blade against the surface of the conveyor to be cleaned.

The scraper can consist of a single blade or several blades mounted alongside each other. Likewise, support 2 may be a single member or several members as shown in Fig. 1.

According to the invention, the insert 2 is in the form of a metal plate 2 comprising a first external part 2A that extends downwards from the base on the scraper blade 1 and is suitably fastened to the support for positioning the blade as shown in Fig. 2. A second internal part 2B is inclined with respect to the aforementioned first part 2A, and that the inclination forces F that are exerted on the blade 1 when the blade is applied against the conveyor 4 are substantially perpendicular to the second part 2B.

When talking of substantially perpendicular, a variation of plus or minus 45° with respect to a strictly perpendicular position will be accepted.

In this way, the forces that are exerted on the blade do not make the junction area of the blade 1 with the plate 2 work in shear, but quite the contrary act on this plate under compression and thus placing the junction or connecting area 2C between the two parts 2A, 2B of the plate work under flexion.

The second part 2B is housed in the lower end or base of blade 1 at a distance D from the face of the synthetic blade. A small proportion of this part 2B is situated outside the synthetic material such that the fold F of the plate is outside the synthetic material. The second part 2B of the plate passes to almost the whole of the thickness of the blade. The width of the plate 2 is less than the width of the blade.

As can be seen, the plate 2 is folded towards the rear of the scraper blade so that, if by mischance the synthetic material came to be detached from the insert or the blade were used beyond what is recommended, there would be no risk of damage or tearing away of the belt since the contact between the insert and the blade would be effected by a rounded part.

As is clear in the drawing, the inclination of the second part 2B of the plate with respect to the first 2A is, in the case depicted,  $115^{\circ}$ , this angle is defined according to the position of the support and of the return device of the conveyor.

This first part 2A of the plate is situated in front of the base of the blade 1. It is situated, in the example depicted, recessed or inward from the flat face 5 of the free end of the scraper.

This plate 2 is preferably made from stainless steel.

Cut-outs in the external part allow the passage of screws.

For better overmoulding, cut-outs in the internal part of the plate can be provided.